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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,681	02/15/2002	Jouni Matula	30-556	7728

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Nixon & Vanderhye
1100 North Glebe Road 8th Floor
Arlington, VA 22201-4714

EXAMINER

HUG, ERIC J

ART UNIT

PAPER NUMBER

1731

DATE MAILED: 05/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/049,681

Applicant(s)

MATULA, JOUNI

Examiner

Eric Hug

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7 and 9-12 is/are rejected.
- 7) ☒ Claim(s) 4, 8, 13 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3, 5, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaiser (US 4,478,615) in view of Smook (Handbook for Pulp and Paper Technologists). Kaiser discloses an apparatus for deaerating stock in a paper machine and a means for providing a flow of deaerated stock to the paper machine. In series are a mixing pump (pump 54) for stock and white water, vortex cleaners, a stock deaerating apparatus for removing air from the stock, a headbox pump (pump 70), and the headbox. Even with a headbox pump utilized, fluctuations in the conditions prevailing within the deaeration system produce fluctuations in the head or stock pressure at the paper machine. Fluctuations in stock pressure may in turn cause fluctuations in the rate of stock flow into the processing machine, and thus may produce undesirable variations in the operation of the machine. For example, fluctuations in the stock pressure and stock flow rate will generally induce undesirable non-uniformity of weight, thickness and strength in the finished paper. Pump 54 (mixing pump) draws stock from tank 34 and into cleaners 18. The clean stock discharged from cleaners 18 is introduced via spray pipes 24 into the receiver 10 of the deaerating apparatus to remove air from the stock and producing deaerated stock. The average rate at which deaerated stock is produced is about the average rate at which stock is

introduced via spray pipes 24. The average rate of stock introduction via spray pipes 24 and hence the average rate of production of deaerated stock in the deaerating apparatus may be controlled by controlling the pressure exerted by pump 54. Deaerated stock is fed from the deaerating apparatus via a second pump 70 through screen 76 and supply line 78 to headbox manifold 80. The net rate at which stock is withdrawn from deaerating device and transferred to the headbox is proportional to the rate of flow through pump 70.

Kaiser teaches that simultaneous control of both pump 54 (mixing pump) and pump 70 (headbox pump) are critical to the flow and pressure of stock to the headbox and to the stability of the operation of the paper machine. This is supported by section 16.2 of Smook, which discloses that two fan pumps (equivalent to a mixing pump and a headbox pump) are provided in a flow approach system having a deaerating device (see also Figure 16.5), and that the stability of a fan pump is critical over the entire range of machine operation. This would include changes from one grade to another. Therefore, at the time of the invention, it would have been obvious to one skilled in the art to simultaneously control the output of a mixing pump and headbox pump responsive to changes on the paper machine in order to uniformly deliver stock to the headbox and obtain a sheet with desirable properties. The claims are also unpatentable in view of *In re Venner*, 120 USPQ 192 (CCPA 1958) where it was determined that providing a mechanical or automatic means to replace manual activity which accomplishes the same result is within the skill of a routineer in the art.

2. Claims 2, 6, 7, and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaiser in view of Smook as applied to claim 1 above, and further in view of Clark et al

(US 2,717,536). In Kaiser above, the level of the deaerating apparatus is controlled by the presence of an overflow weir, thus the level of the stock within the deaerating apparatus is ideally constant. One can control the flow rate of stock in the deaerating apparatus by means of the two pumps, yet one cannot controllably adjust the level of the stock in the deaerating apparatus.

Similar to Kaiser, Clark discloses a deaerating apparatus for paper making stock, however the apparatus of Clark does not utilize an overflow to control the level of stock. The level of stock within the deaerating apparatus is controlled primarily by the output of the two pumps (and to a far lesser extent by the amount of stock present in the bypass flows and lost in the vacuum portion of the apparatus). If one chooses to use a deaerating device having no overflow as per Clark (and as the present invention suggests may be used), then controlling the flow and pressure of stock to the headbox by means of the two pumps would inherently entail some degree of monitoring and control of the level of the stock in the deaerating device. The level of stock in the deaerating device is important to provide *inter alia* proper vacuum and deaerating of the stock. Therefore, at the time of the invention, it would have been obvious to one skilled in the art to also control the level of the deaerating apparatus (gas separation device) in order to maintain a desired operability of the deaeration apparatus when controlling the output of the headbox feed pump and maintaining the pressure in the headbox.

Allowable Subject Matter

Claims 4, 8, 13, and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 4 and 8 are allowable, because the prior art does not disclose or suggest anticipatory control of the mixing pump, i.e., in anticipation of changes in the headbox feed pump further downstream. Claim 13 is allowable, because the prior art does not disclose or suggest stepwise control of both pumps. Claim 14 is allowable, because the prior art does not disclose or suggest a means of controlling the surface level of the gas separation tank in a method where both the surface level of a gas separation tank and the pressure of the headbox are controlled. Fuzzy logic control of the surface level requires at least an empirical relationship between a measured variable about the headbox or headbox pump and the level of the gas separation tank, and such type of relationship has not been established in the prior art.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lebeau et al (US 4,374,703) discloses a control system for the fan pump and other stock flow regulatory devices responsive to measurements of the stock level and pressure in the headbox.

Eastwood (US 3,077,924) discloses a flow control system responsive to a measured pressure head in the headbox or to a change in wire speed or other variables, whereby means are

provided for controlling the rate of delivery of stock to the headbox from fan pump 15 (see column 4, lines 18-32; Figure 2; column 9, lines 9-18).

Rice (US 3,703,436) discloses anticipatory control of the headbox slice opening in a paper machine. The slice opening is controlled based on measurements of rush-drag, the pressure and liquid level in the headbox, and on the consistency of the flow to the headbox. The consistency can be controlled by varying the speed of capacity of a fan pump responsive to stock slurry and white water from a wire pit (column 2, lines 60-65).

Wahren (US 3,779,863) discloses control of the stock feed to a paper machine headbox, whereby the speed of a stock fan pump is varied responsive to measurements of the stock level or pressure in the headbox and of a change in the wire speed.

Andersson et al (US 4,378,978) discloses a system for degassing papermaking stock in a paper machine. White water from a wire pit and thick stock are mixed together at a mixing pump and then supplied to vortex cleaners and then to a deaeration tank. Deaerated stock is then pumped from the deaeration tank to the headbox. Andersson uses a "regenerative" pump between the vortex cleaners and the deaeration tank to help regulate the level of the stock in the deaeration tank also to reduce the energy demand on the headbox pump.

Kaiser et al (US 3,206,917) discloses a flow control system for deaerated stock in a paper machine. Kaiser teaches the importance of maintaining a constant flow of stock to the headbox by minimizing fluctuations in stock flow and stock composition, particularly during changes on the paper machine from one grade to another. Consistency and flow to the headbox is regulated by a constant deaeration tank level and by control of the overflow of the deaeration tank back to the feed pump at the wire pit.

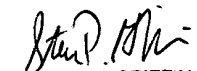
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Hug whose telephone number is 703 308-1980. The examiner can normally be reached on Monday through Friday, 9:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 703 308-1164. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications and 703 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0651.



jeh
May 15, 2003



STEVEN P. GRIFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700